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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
HADDAD, MAHER M

ART UNIT	PAPER NUMBER
1644	

DATE MAILED: 12/03/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/732,754	DRUILHE ET AL.
	Examiner	Art Unit
	Maher M. Haddad	1644

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2002*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,15,20-24 and 26-33* is/are pending in the application.

4a) Of the above claim(s) *1-9, 15 and, 20-24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *26-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4)☐ Interview Summary (PTO-413) Paper No(s). _____.
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other:

RESPONSE TO APPLICANT'S AMENDMENT

1. Applicant's amendment, filed 9/30/02 (Paper No. 17), is acknowledged. Claims 1-9, 15, 20-24 and 26-33 are pending.

2. Claims 1-9, 15, and 20-24 stand withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b) as being drawn to nonelected inventions.

3. Claims 26-33 are under consideration in the instant application.

4. Applicant's cancellation of Claims 10-14, 16-19 and 26 have obviated the previous objections and rejections with respect to claims 10-14, 16-19 and 26.

5. The following new grounds of rejection are necessitated by the amendment filed on 9/30/02, paper No. 17.

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 26-33 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a New Matter rejection.

The composition "consisting essentially of" a lipopeptides having a sequence of LSA3-NRII (SEQ ID NO:2), without adjuvant, capable of inducing a mucosal protection in vivo against a "malaria infection" claimed in claim 26 and the composition "consisting essentially of" a lipopeptides having a sequence of LSA1-J (SEQ ID NO: 3) without adjuvant, capable of inducing a mucosal protection in vivo against a "malaria infection" claimed in claim 30 represent a departure from the specification and the claims as originally filed.

Applicant's amendment filed 9-30-02 does not point to the specification for support for the newly added limitations "consisting essentially of" and "malaria infection" as recited in claims 26 and 30. However, the specification does not provide a clear support of "consisting essentially" and "malaria infection of". It is noted that the specification on page 3 line 1 discloses that the peptides were derived from malaria lipid-tailed polypeptides. The instant claims now recite limitations which were not clearly disclosed in the specification and claims as originally filed.

7. Claims 26-33 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a composition comprising a lipoprotein of SEQ ID NOS: 1- 3 for *in vivo* induction of both B- and T-cell responses, does not reasonably provide enablement for any other composition consisting essentially of any lipopeptides **having** a sequence of SEQ ID NO: 2, without adjuvant, capable of inducing a mucosal protection in vivo against a malaria infection in claim 26 wherein said lipopeptides has at least any lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence, in claim 27; any vaccine composition for mucosal administration comprising the composition of claim 26, which induces a B and/or T cell response in vivo in the absence of an adjuvant in claim 28, or any immunogenic composition comprising the composition of claim 26 in claim 29, any composition consisting essentially of any lipopeptides **having** a sequence of SEQ ID NO: 3, without adjuvant, capable of inducing a mucosal protection in vivo against a malaria infection in claim 30 wherein said lipopeptides has at least any lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence, in claim 31, any vaccine composition for mucosal administration comprising the composition of claim 30, which induces a B and/or T cell response in vivo in the absence of an adjuvant in claim 32, or any immunogenic composition comprising the composition of claim 30 in claim 33. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention.

The specification disclosure is insufficient to enable one skilled in the art to practice the invention as broadly claimed without an undue amount of experimentation.

Other than the specific SEQ ID NOS: 1-3 mentioned above for induction of both B- and T-cell responses, the specification fails to provide any guidance as how to make and use any composition consisting essentially of any lipoprotein "having" a sequence of SEQ ID NOS: 2 or 3. The term "having" means that a compound can include additional amino acids on either or both of the N- or C- termini of given sequence. There is insufficient guidance as to which amino acid residue within the lipoprotein, or the lipopeptide mentioned above can be deleted, substitute and whether the resulting lipoprotein or lipopeptide would maintain the function as SEQ ID NOS:1-3. Ngo *et al* teach that the amino acid positions within the polypeptide/protein that can tolerate change such as conservative substitution or no substitution, addition or deletion which are critical to maintain the protein's structure/function will require guidance (see Ngo et al., 1994, The Protein Folding Problem and Tertiary Structure Prediction, pp. 492-495). Given the lack of sufficient guidance and working examples, predicting what changes can be made to the amino acid sequence of SEQ ID NOS: 1-3 that after substitution, deletion, insertion and/or

modification will retain both structure and have similar function as SEQ ID NOS: 1-3 is unpredictable. *In re Fisher*, 166 USPQ 18 indicates that the more unpredictable an area is, the more specific enablement is necessary in order to satisfy the statute. Since the amino acid sequence of a lipopeptide determined its structural and functional properties, predictability of which fragments will retain functionality requires knowledge of, and guidance with regard to, which amino acids in the lipopeptide's sequence contribute to its structure, and therefore, function.

The goal of vaccination is the induction of circulating specific antibodies to prevent the initial infection of the liver with the parasite. There is no sufficient guidance provided to assist one skilled in the art in the selection of all such possible vaccine containing any lipopeptide nor is there evidence provided that any lipoprotein or lipopeptide would be therapeutically effective. It appears that undue experimentation would be required of one skilled in the art to practice the claimed composition in providing effective vaccines to induce the circulating parasite specific antibodies.

Reasonable correlation must exist between the scope of the claims and scope of enablement set forth. In view of the quantity of experimentation necessary, the limited working examples, the unpredictability of the art, the lack of sufficient guidance in the specification, and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

9. Claims 26-33 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is in possession of SEQ ID NOS: 1- 3 for the induction of B- and T-cell responses.

Applicant is not in possession of any other composition consisting essentially of any lipopeptides "having" a sequence of SEQ ID NO: 2, without adjuvant, capable of inducing a mucosal protection in vivo against a malaria infection in claim 26 wherein said lipopeptides has at least any lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence, in claim 27; any vaccine composition for mucosal administration comprising the composition of claim 26, which induces a B and/or T cell response in vivo in the absence of an adjuvant in claim 28, or any immunogenic composition comprising the composition of claim 26 in claim 29, any composition consisting essentially of any lipopeptides having a sequence of SEQ ID NO: 3, without adjuvant, capable of inducing a mucosal protection in vivo against a malaria infection in claim 30 wherein said lipopeptides has at least any lipid residue bound to an epitope T amino acid sequence and optionally at least one epitope B amino acid sequence, in claim 31, any vaccine composition for mucosal administration comprising the composition of claim 30, which induces a B and/or T cell response in vivo in the

absence of an adjuvant in claim 32, or any immunogenic composition comprising the composition of claim 30 in claim 33.

The term "having" means that a compound can include additional amino acids on either or both of the N- or C- termini of given sequence. Applicant has disclosed only SEQ ID NOS: 1-3; therefore, the skilled artisan cannot envision all the contemplated amino acid sequence possibilities recited in the instant claims. Consequently, conception cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method. Adequate written description requires more than a mere statement that it is part of the invention. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (CAFC1993). The Guidelines for the Examination of Patent Application Under the 35 U.S.C.112, ¶ 1"Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species disclosure of relevant, identifying characteristics, i.e., structure or other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 20001, see especially page 1106 3rd column).

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.

Applicant is directed to the Revised Interim Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 26-33 are rejected under 35 U.S.C. 102(b) as being anticipated by Perlaza et al (July 1998).

Perlaza *et al* teach a composition comprising LSA1-J (the instant claimed SEQ ID NO: 3) and LSA-3 NRII (the instant claimed SEQ ID NO: 2) lipopeptides in PBS (the entire document and page 3424, table I in particular), as recited in claims 26, 30, 29 and 33, wherein the lipopeptide is tailed with a lipid component (page 3423, paragraph 1 right column in particular), as recited in claims 27 and 31.

Perlaza *et al*., further teach a vaccine composition of lipid-tailed peptides injected in phosphate-buffered saline without an adjuvant were used to immunized monkeys (in vivo) to develop an immune response (page 3423, paragraph 1 right column in particular), as recited in claims 28 and 32. The immune response was demonstrated by the induction of both B and T cell response to the peptides (page 3423, see the Abstract in particular).

The reference teachings anticipate the claimed invention.

Applicant's arguments. filed on 9-30-02, (Paper No. 17) have been fully considered but are not persuasive.

Applicant argues Perlaza *et al* disclose the subcutaneous administration of a " mixture of peptides as described in Table 1" to elicit an immune response and hence antigen mixtures were required to elicit the aforementioned immune response and in so doing the mixture would clearly materially affect or alter the basic and novel characteristics of the claimed invention. Applicant argues that "Perlaza *et al* do not disclose or suggest that either SEQ ID NO2 or SEQ ID NO:3 is capable of inducing a mucosal protection in vivo against a malaria infection". Applicant agues that a reference to anticipate an invention, the reference "must teach every element of the claim".

As pointed previously and herein, Perlaza *et al*., teach the lipopeptides of SEQ ID NO:2 and 3. Applicant has not provided objective evidence to distinguish the prior art lipopeptides from that encompassed by the claimed invention. A species reads on a genus.

The claimed functional limitations would be inherent properties of lipopeptides because the product used in the reference is the same as the claimed product. Therefore "capable of inducing a mucosal protection in vivo against a malaria infecton" is considered inherent properties.. The term "consisting essentially of" is open ended. It would open up the claims to include the reference mixture of peptides.

Products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See MPEP 2112.01.

Also, as restated in the court in Atlas Powder Co. V. IRECO, 51 USPQ2d 1943 (Fed. Cir. 1999). "Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art... However, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." The Court further held that "this same reasoning holds true when it is not a property but an ingredient which is inherently contained in the prior art".

12 No claim allowed

13 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maher Haddad, whose telephone number is (703) 306-3472. The examiner can normally be reached Monday to Friday from 8:00 to 4:30. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached at (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 305-3014.

Maher Haddad, Ph.D.
Patent Examiner
Technology Center 1600
December 2, 2002

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